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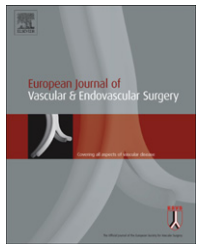
Eur J Vasc Endovasc Surg (2010) **39**, 55–61



Patient Preference for Surgical Method of Abdominal Aortic Aneurysm Repair: Postal Survey

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Submitted 7 July 2009; accepted 21 August 2009
Available online 22 September 2009

KEYWORDS
Abdominal aortic aneurysm;
Patient satisfaction;
Vascular surgical procedures;
Questionnaires, consumer health information

Abstract *Objectives:* To determine whether men with small abdominal aortic aneurysm have a preference between either endovascular or open aneurysm repair for future treatment.
Design: Prospective study of self-declared treatment preference following receipt of a validated patient information pack.
Participants: Men aged 65–84 years ($n = 237$) with asymptomatic aneurysm (4.0–5.4 cm) detected by population-based screening.
Methods: An unbiased, validated patient information pack and questionnaire were developed to conduct a postal survey.
Results: One hundred sixty seven participants (70%) returned a completed questionnaire; 24 (10%) did not respond at all. Initially, only 38 (23%) declared a treatment preference. After reading the information pack, 130 participants (80%) declared a treatment preference: 30 preferred open repair (18%), 77 endovascular repair (46%), 23 were happy with either option (14%) and only 34 remained without any preference (20%). Nearly all (92%) thought that the information pack had prepared them well for future discussions with clinicians and with no single feature identified as influencing the preference-making process, 66 respondents (40%) still opted to 'take the advice of the doctor'.
Conclusion: The patient information pack facilitated the development of treatment preferences with endovascular repair being preferred to open repair. Nevertheless for patient-centred care, vascular centres must continue to safely provide both open and endovascular repair.
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1078-5884/$36 © 2009 Published by Elsevier Ltd on behalf of European Society for Vascular Surgery.
doi:10.1016/j.ejvs.2009.08.008

Introduction

Abdominal aortic aneurysm is a common, potentially fatal, condition in older men. There are currently two main surgical methods of aortic aneurysm repair available for patients: open surgical repair and endovascular aneurysm repair (EVAR). Open surgical repair has been in use for over 50 years[1] and involves a major surgical procedure with a midline incision performed under general anaesthesia. The endovascular technique, available since the early 1990s,[2,3] involves a less invasive deployment of a stent-graft via two small femoral incisions and can be carried out under local anaesthesia. Two clinical trials, the United Kingdom Endovascular Aneurysm Repair trial (EVAR 1)[4,5] followed by the Dutch Randomised Endovascular Aneurysm Management trial (DREAM)[6] have compared and evaluated the outcomes of both of these options in terms of mortality, durability, health-related quality of life and cost-effectiveness. The findings have shown a significant benefit with the endovascular technique in terms of operative mortality and aneurysm related mortality but very similar outcomes of both treatment options at mid-term follow-up in terms of overall mortality and health-related quality of life. Endovascular repair was associated with a greater number of postoperative complications and re-interventions, and consequently the need for long-term follow-up[4,6] which all contributed to higher treatment costs.[7,8]

To achieve effective patient-centred care, patients need to be well-informed about the available evidence regarding their condition and treatment options, so that their views and preferences can be considered when formulating treatment plans. Particularly where different treatments offer similar expectations of clinical success, individual patient preferences become increasingly important. However, no trial has addressed this vital issue of whether patients have any preference for either of the current two methods for future aortic aneurysm repair. Some patients may prefer the early benefits of endovascular repair whilst others may feel more at ease with the definitive, long-standing history of open repair. In either case, the patients' preference should contribute to the appraisal process and their views need to be considered in conjunction with the external clinical data to produce an evidence based approach to care decisions.[9]

Following several trials of screening for abdominal aortic aneurysm, a recent Cochrane review has summarised the overall benefits of such programmes.[10] Many of those with screen-detected aneurysms will have aneurysms below the current threshold for considering an interventional procedure for aneurysm repair, i.e. 5.5 cm diameter;[11,12] however, approximately three quarters of these men will eventually exceed the threshold diameter and be considered for aneurysm repair.[11,12]

This study was designed to determine whether men under surveillance as part of an aneurysm screening programme have an initial preference for either endovascular or open aneurysm repair and to investigate whether and how such preferences may be influenced by provision of unbiased patient information.

Patients and Methods

This study was conducted using methodology approved by the Riverside Research Ethics Committee; March 2007 (07/Q0401/17) and September 2007 (07/H0706/82).

Study design

The study was divided into two phases; each requiring separate ethical review.

Phase 1 — development of information pack and survey questionnaire

A validated patient information pack was devised clearly describing the background and natural history of abdominal aortic aneurysm. It included a description of both endovascular and open repair and incorporated information on patient suitability for each treatment, exact procedural details, the associated benefits and disadvantages of each and the most up to date published clinical trial evidence on the early and mid-term performance results for each treatment. The quality of the proposed patient information pack was assessed at the Picker Institute Europe using an in-house validation tool based on the International Patient Decision Aid Standards (IPDAS) guidelines.[13] The pack also underwent testing and refinement using 16 one-to-one interviews carried out at Charing Cross hospital; these were conducted with a group of patients whose aneurysms were either currently untreated or had been previously repaired. A good socioeconomic cross-section of the population was represented during these interviews. The validated information pack is available online as supplementary material.

The survey questionnaire was developed using literature review (focusing particularly on questionnaires to explore decision-making processes), external consultation with experts in the proposed field of study, review of existing validated Picker Institute Europe questionnaires and information gathered during the patient interviews described above. The questions consisted of both pre-coded and free text questions grouped according to six themes: (1) initial preference; (2) current preference; (3) the things that are important to you; (4) making a decision; (5) your views of the information pack; and (6) about you. Validation of the questionnaire consisted of two rounds of patient interviews: one round with a subgroup of the patients who took part in the development of the information package and a second round of 16 one-to-one cognitive interviews with men who were representative of the subject group intended to be approached to participate in the main survey. The validated questionnaire is available online as a supplement.

Phase 2 — pilot and main survey

A pilot study was conducted with 50 participants to test and optimise the proposed survey methodology. The main survey was then initiated with a further 237 participants. All participants were male because they were taken from population aneurysm screening programmes in the UK, which are currently male based. They were aged 65 years or greater, with asymptomatic aortic aneurysms of 4.0–5.4 cm (maximum diameter) and were part of the screening

programmes within the Gloucestershire Hospitals NHS Foundation Trust (pilot and main survey) or University Hospitals of Leicestershire NHS Trust (main survey only). Thus, two different geographical areas were involved in order to assess the generalisability of the survey findings. Potential participants were excluded if a decision had already been taken to never surgically intervene or if they were known to have severe mental disability that would prohibit completion of the questionnaire.

Survey methodology

The methodology took the form of a standard NHS postal survey, but numerical identifiers were used to pseudo-anonymise all participants. Due to the potentially sensitive nature of the subject matter, a letter of introduction to the survey from the local vascular surgeon (responsible for the screening programme) was incorporated as a first stage; this provided potential participants with the opportunity to decline to take part in the study. This was followed by mailing of the patient information pack and survey questionnaire, together with a cover letter and freepost reply envelope. Two reminders were sent at fortnightly intervals to non-responders; the second of which contained duplicates of the information pack and questionnaire in case the originals had been misplaced. The participants were reminded at each stage that the survey was voluntary and they could decline to take part at any time. The survey took 8 weeks to complete and was conducted between January and March 2008.

Results

A flow chart illustrating the responses of the main survey participants is shown in Fig. 1. The survey sample included 237 men: 136 from Trust 1 and 101 from Trust 2. Following the mailing of the letter of introduction, 30 respondents or their representatives contacted the free-phone number: 27 (11%) opted-out of taking part in the survey, two were notifications of recent death and one was to explain that a decision never to repair his aneurysm had been taken, i.e. ineligible to take part. The patient information pack and questionnaire were then sent to the remaining 207 participants. There was one further notification of death at this stage and one survey which was returned, marked address unknown. Within 2 weeks 116 people (49%) had responded to this initial survey mail-out; the response rate being similar for the two locations. A further 47 people responded to the first reminder and 18 to the second reminder. By the end of the 8 weeks, 167 of the 237 participants in the initial sample had returned a completed questionnaire, a response rate of 70% (or 81% of those eligible to reply). A total of 46 people (17%) had opted-out by either telephone or returning a blank questionnaire and only 24 (10%) had not responded in any way. All results from this point forward are reported as a percentage of the total number of respondents ($n = 167$).

Respondent characteristics

The age range of respondents was 66—84 years and the majority (70%) were between 66 and 75. Almost all respondents described themselves as 'white British' (94%), 79% lived with a spouse or partner, nearly all (90%) were retired and 70% had left school at the age of 16 years or less. Almost two thirds (63%) reported that they had a long-standing illness, disability or condition; which caused difficulty with routine activities in just over a quarter (28%) of respondents.

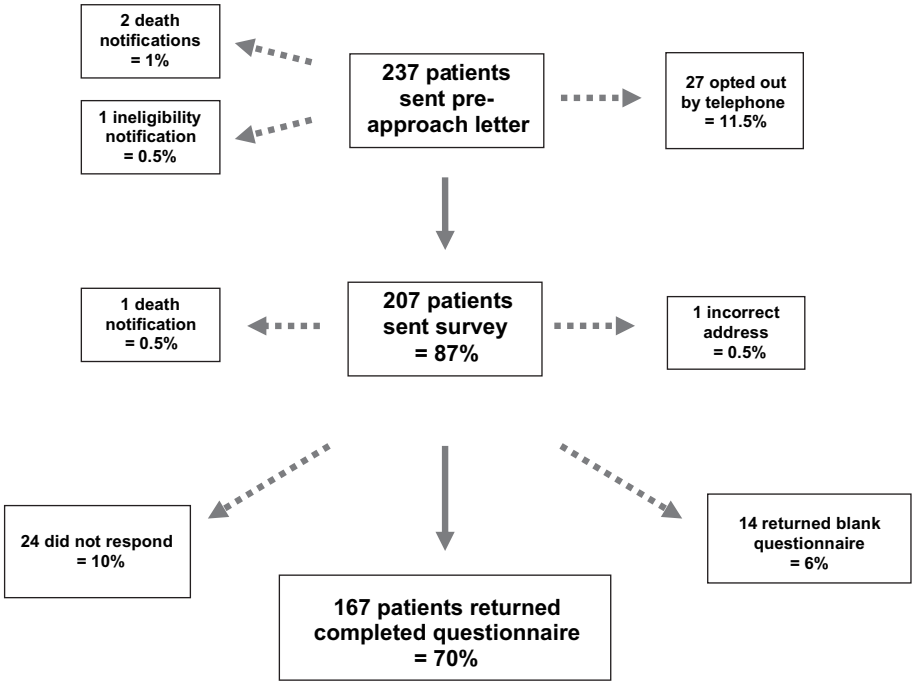

Figure 1 Flow diagram of participant response during the main patient preference postal survey.

Baseline preferences for future aneurysm repair

Only a minority of respondents (16%) had considered the options for aneurysm repair prior to receiving the survey and even less (10%) had discussed the options with a hospital doctor. Most (89%) had not received any written information about the two surgical treatment options available and two thirds had not received information from other sources such as nurses, general practitioners, internet or friends/family. In this 'naive' situation, few respondents expressed a preference about any necessary future treatment. Of those that did have an opinion: just 10 respondents (6%) were in favour of open repair (five definitely and five to some extent) in contrast to 28 respondents (17%) who favoured EVAR (17 definitely and 11 to some extent). Although 19 (11%) men were happy with either treatment; the majority of respondents ($n = 105$, 63%) did not know which they preferred. These results are shown in Fig. 2.

Respondent views of the patient information pack

Nearly all respondents (88%) thought the length of the pack was ''just right'' and 76% thought it was not biased towards either treatment modality. Of just 22 men who indicated the presence of any bias, twice as many thought the information was slanted towards endovascular repair as opposed to open repair. Eighty-six percent of respondents felt that the information pack had helped them to make an informed choice. Even more (92%) thought that the content had prepared them well for future discussions with their hospital doctor or surgeon.

Informed preferences for future aneurysm repair

After reading the information pack, the number of men preferring open repair had increased to 30 (18%) (20 definitely and 10 to some extent) and those respondents preferring endovascular repair had increased to 77 (46%) (40 definitely and 37 to some extent); 23 men (14%) were still happy with either treatment. Only 34 respondents (20%) still did not know which treatment option they would prefer for any future aneurysm repair. These results are shown in Fig. 2.

Factors influencing patient preference

Participants indicated that there was no single dominant feature influencing their declared preferences, and most frequently said they would 'take the advice of the doctor' ($n = 66$, 40%) This was followed by 20 (12%) who prioritised their known medical history/existing condition, 18 respondents (11%) who cited invasiveness of surgery (greater for open repair), 17 (10%) who identified risk of postoperative complications (higher for endovascular repair) and 14 (8%) who were most concerned by the likelihood of surviving the operation (higher for endovascular repair). These results are summarised in Table 1. Interestingly, participants' opinions were spread evenly as to whether the benefits of invasive surgery outweighed the higher risk of postoperative complications requiring possible re-intervention associated with endovascular repair ($n = 49$, 29% and $n = 56$, 34%, respectively).

In line with indicated preferences, two thirds of respondents who preferred open repair said they preferred a lower risk of postoperative complications (67%) and 66%

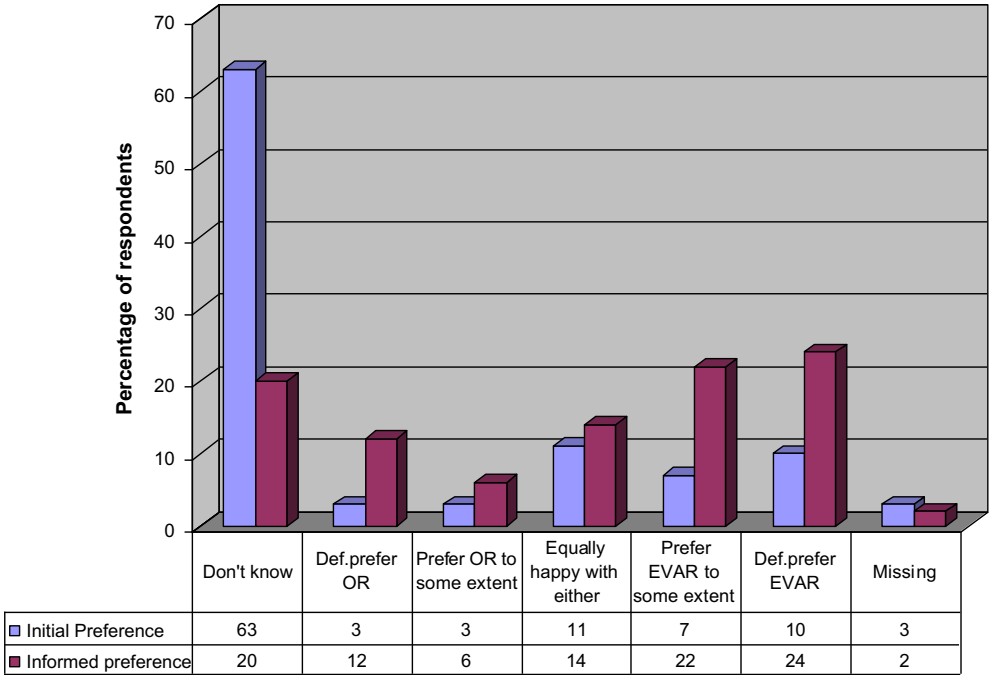

Figure 2 Initial preference compared with informed preference for aneurysm-screened men considering possible treatment options for future aneurysm repair. (Def. = definitely, OR = open repair and EVAR = endovascular repair).

Table 1 Principal factors influencing participants' preferences for method of future aneurysm repair.

Factors of influence	Frequency(*n*)	Percentage of all respondents(%)
Would take advice of doctor	66	40
Medical history/ existing condition	20	12
Invasiveness of surgery	18	11
Risk of postoperative complications	17	10
Likelihood of survival	14	8
Don't know/unsure	8	5
Other	15	9
Missing	9	5
Total	167	100

Factors listed in the questionnaire which were identified by less than 10 participants are grouped together with the ''other'' category.

who preferred endovascular repair said they preferred less invasive surgery. Also almost half of those men who had no clear preference for technique ($n = 11/23$) indicated a preference for a lower risk of postoperative complications; as did nearly a quarter ($n = 8/34$) of those who did not know what their treatment of choice was. However, the numbers in each group are small and these findings should be treated with caution. Further exploration of the other, most commonly cited, differences between the two interventions indicated that respondents placed most emphasis on a shorter recovery time (50%) and avoiding intensive care treatment (42%) and least importance on scar size (10%) and risk of impotence (27%). They also tended to place importance on those factors which were characteristic of their surgical treatment of choice (Fig. 3). There were no statistically significant variations between preference and factors such as hospital trust, age or health/carer status.

Discussion

This survey, completed by 167 men with asymptomatic small abdominal aortic aneurysm, provides insight into the preferences, expectations and experiences of the targeted group. The response rate of 70% was very good for a postal patient preference study and was achieved by optimised methodology.[14] Almost all participants (92%) appreciated that the information pack provided information to help support them to discuss any decision about future surgical treatment options for their aneurysm. The pack was instrumental in helping two thirds of respondents who initially did not have a preference to go on to express an informed preference. After reading the information pack, most participants wanted to be able to discuss both of the options with their clinician and also rely on the clinician for advice and guidance. Since patients place great reliance on clinician advice, it was important to conduct this survey in patients who had not yet been referred to a vascular surgeon or endovascular specialist. Hence, our choice of subjects enrolled in community screening programmes for inclusion in this study.

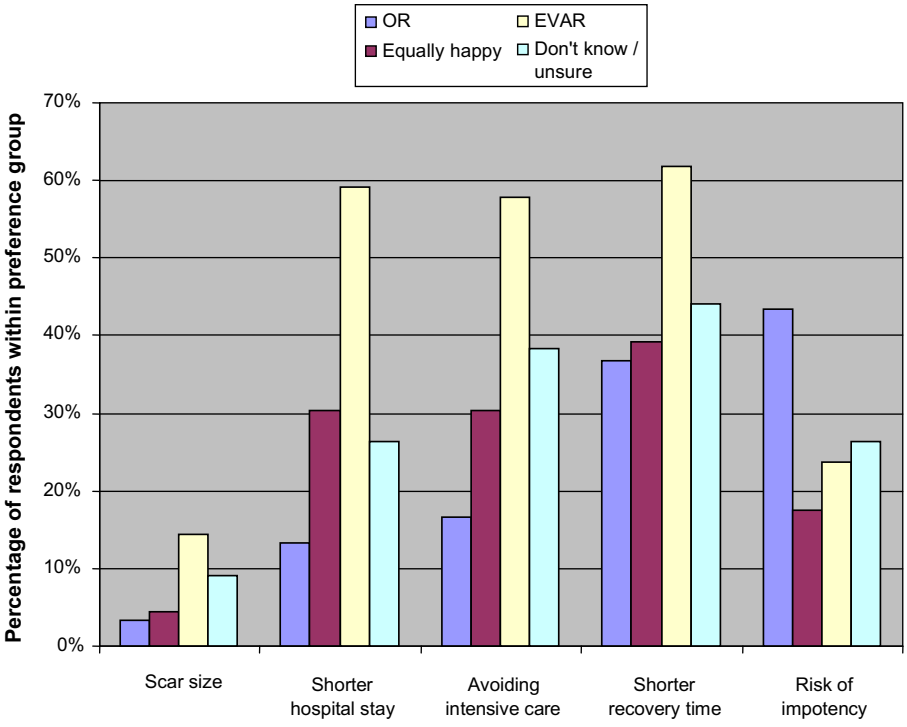

Figure 3 Chart showing the percentage of respondents, within each preference group, who rated identified key factors as either 'extremely' or 'somewhat' important in their decision-making process. (OR = open repair and EVAR = endovascular repair).

Participants showed a greater degree of preference for endovascular versus open repair before and after reading the validated patient information pack; with informed respondents more than twice as likely to favour endovascular over open repair. Of note, respondents who expressed a preference for endovascular repair were equally split in terms of the strength of their preference (24% definitely:22% to some extent) in contrast to the smaller number who preferred open repair but appeared more certain about their choice (12%:6%).

In general, participants did not demonstrate contradictory behaviour in terms of choosing the surgical option which supported the factors which were important to them and, therefore, expressed preferences can be accepted as reliable. The similarity of findings between a county location, served by general surgeons with a vascular interest, and a large urban centre, served by a specialist vascular service, suggests that the findings are generalisable, at least within the UK Caucasian population.

Although there were no statistically significant variations between preference and factors such as geographical area, age or health/carer status, there were some worth mention. Respondents in all age groups preferred endovascular to open repair, but younger men appeared more likely to prefer endovascular repair than older ones; and the oldest men were least likely to express a clear preference for a specific treatment. Younger men also put greater emphasis on factors such as scar size and impotence whereas a shorter hospital stay and avoiding intensive care were more important to older participants. Those men with a long-term illness or disability were more likely to favour open repair whereas respondents who provided care were more likely to opt for endovascular repair.

Overall, informing patients about treatment options is likely to enhance the patient-clinician relationship and lead to more effective patient-centred care. Information received from a validated information pack may be evaluated more objectively than advice from the treating physician. The information pack about interventions for aortic aneurysm facilitated the development of treatment preference by most patients, with endovascular repair being preferred over open repair; even though most were prepared to comply with their clinicians advice. Such patient preference should receive strong consideration in the continuing debate about the cost-effectiveness of endovascular repair.[7,8] However, some patients will not be anatomically suitable for endovascular repair and some will prefer open repair, which carries no requirement for long-term follow-up. Therefore, for patient-centred care of abdominal aortic aneurysm, vascular centres must continue to provide both endovascular and open repair.

Conflict of Interest

RMG is one of the trustees of the Camelia Botnar Arterial Research Foundation. He has had research support from manufacturers of stent-grafts: Cook, Boston Scientific, Bard and Medtronic Vascular. These companies, with W.L.Gore and Edwards Lifesciences, are major sponsors of the annual international Charing Cross Symposium, organised by BIBA conferences. None of the other authors declared potential conflicts of interest.

Funding

Funding was obtained from the Graham Dixon Charitable Trust and Camelia Botnar Arterial Research Foundation. The funding bodies had no influence on the course of the study.

Acknowledgments

University Hospital Uppsala, Sweden: Professor David Bergqvist — peer review of patient information pack.

Charing Cross Hospital, London: Mr Ian Franklin — peer review of patient information pack.

Vascular Surgery Research Group, Imperial College London: Louise Brown and Angela Williams — review of patient information pack and survey questionnaire.

Picker Institute Europe, Oxford: Elisabeth Garratt — data collection.

Danielle Swain and Don Redding — review of patient information pack and survey questionnaire.

Janet Askham — critical review and editorial assistance.

Gloucestershire Hospitals NHS Foundation Trust: E. Shaw — patient identification and screening.

C. Rodd, M. Whyman

University Hospitals of Leicester NHS Trust: G. Hussey — patient identification and screening.

N.J.M. London, M.J. Dennis, M. McCarthy, A. Nasim, R.D. Sayers.

Appendix

Supplementary material

Supplementary material can be found, in the online version, at doi:10.1016/j.ejvs.2009.08.008

References

1 Dubost C, Allary M, Oeconomos N. Treatment of aortic aneurysm; removal of the aneurysm; re-establishment of continuity by grafts of preserved human aorta. *Mem Acad Chir (Paris)* 1951;**77**:381—3.

2 Volodos NL, Shekhanin VE, Karpovich IP, Troian VI, Gur'evlu A. A self-fixing synthetic blood vessel endoprosthesis. *Vestn Khir Im I I Grek* 1986;**137**:123—5.

3 Parodi JC, Palmaz JC, Barone HD. Transfemoral intraluminal graft implantation for abdominal aortic aneurysm. *Ann Vasc Surg* 1991;**5**:491—9.

4 EVAR. Trial Participants. Endovascular aneurysm repair versus open repair in patients with abdominal aortic aneurysm (EVAR trial 1): randomised controlled trial. *Lancet* 2005;**365**(9478):2179—86.

5 Greenhalgh RM, Brown LC, Kwong GP, Powell JT, Thompson SG. Comparison of endovascular aneurysm repair with open repair in patients with abdominal aortic aneurysm (EVAR trial 1), 30-day operative mortality results: randomised controlled trial. *Lancet* 2004;**364**(9437):843—8.

6 Blankensteijn JD, de Jong S, Prinssen M, van der Ham, Buth J, van Sterkenberg SM, Verhagen HJ, et al. Two year outcomes after conventional or endovascular repair of abdominal aortic aneurysms. *N Engl J Med* 2005;**352**:2398—405.

7 Epstein DM, Sculpher MJ, Manca A, Michaels J, Thompson SG, Brown LC, et al. Modelling the long-term cost-effectiveness of endovascular or open repair for abdominal aortic aneurysm. *Br J Surg* 2008;**95**(2):183—90.

8 Prinssen M, Buskens E, de Jong SE, Buth J, Mackaay AJ, van Sambeek MR, et al. Cost-effectiveness of conventional and endovascular repair of abdominal aortic aneurysms: results of a randomized trial. *J Vasc Surg* 2007;**46**(5):883—90.
9 Sackett DL, Rosenberg WM, Gray JA, Haynes RB, Richardson WS. Evidence based medicine: what it is and what it isn't. *BMJ* 1996; **312**(7023):71—2.
10 Cosford PA, Leng GC. Screening for abdominal aortic aneurysm. Cochrane Database of Systematic Reviews: Reviews 2007 Issue 2 John Wiley & Sons, Ltd Chichester, UK, doi: 10 1002/14651858 CD002945 pub2 2007.
11 UK. Small Aneurysm Trial Participants. Mortality results for randomised controlled trial of early elective surgery or ultrasonographic surveillance of small abdominal aortic aneurysms. *Lancet* 1998;**352**:1649—55.
12 Lederle FA, Wilson SE, Johnson GR, Reinke DB, Littooy FN, Acher CW, et al. Immediate repair compared with surveillance of small abdominal aortic aneurysms. *N Engl J Med* 2002;**346**(19):1437—44.
13 International Patient Decision Aid Standards (IPDAS) Collaboration. The goal of the IPDAS collaboration is to establish an internationally approved set of criteria to determine the quality of patient decision aids; 2006.www.ipdas.ohri.ca
14 Nakash RA, Hutton JL, Jorstad-Stein EC, Gates S, Lamb SE. Maximising response to postal questionnaires-a systematic review of randomised trials in health research. *BMC Med Res Methodol* 2006;**6**(5):5.